

QE
801
H25

A
0
0
0
8
2
6
4
8
8
9



U.S. SOUTHERN REGIONAL LIBRARY FACILITY

Hanna, G. Dallas

Fossil Freshwater Mollusks
from Oregon

University of California
Southern Regional
Library Facility



UNIVERSITY OF OREGON PUBLICATION

Vol. 1

AUGUST, 1922

No. 12

FOSSIL FRESHWATER MOLLUSKS
FROM OREGON

Contained in the Condon Museum
of the University of
Oregon



*Library Univ of Texas
Compliments of*

BY

G. DALLAS HANNA

*Fred Lockley
Portland
Oregon*

UNIVERSITY OF OREGON PUBLICATION

The University of Oregon Publication Series is offered in exchange for the publications of learned societies and institutions, universities, and libraries. Address inquiries to **MANAGER, UNIVERSITY PRESS, UNIVERSITY OF OREGON, EUGENE, OREGON.**

Vol. 1. No. 1.	The Efficiency of Oregon Children in the Tool Subjects as Shown by Standard Tests. By Chester Arthur Gregory. November, 1919	\$1.00
No. 2.	An Experimental Investigation of the Process of Choosing By Raymond H. Wheeler. January, 1920	1.00
No. 3.	Earthquakes in Oregon. By Warren Dupre Smith. Reprint. Map. February, 192025
No. 4.	The Foster-Child Fantasy. By Edmund S. Conklin. Reprint. March, 192025
No. 5.	The Synaesthesia of a Blind Subject. By Raymond H. Wheeler. May, 1920	1.00
No. 6.	Fossil Mollusks from the John Day Basin in Oregon. By G. Dallas Hanna, August, 192050
No. 7.	A Study of the Mental, Pedagogical and Physical Development of the Pupils of the Junior Division of the University High School, Eugene, Oregon. By Giles Murrel Ruch, September, 1920	1.00
No. 8.	The Derivation and Standardization of a Series of Diagnostic Tests for the Fundamentals of First Year Algebra. By Earl Roy Douglass, April, 1921.	1.00
No. 9.	The Trigonidae from the Pacific Coast of North America. By Earl L. Packard, May, 1921	1.00
No.10.	The Synaesthesia of a Blind Subject with Comparative Data from an Asynaesthetic Blind Subject. By Raymond Helder Wheeler and Thomas D. Cutsforth, June, 1922	1.00
No.11.	Mental Differences in Certain Immigrant Groups, Psychological Tests of South Europeans in Typical California Schools with Bearing on the Educational Policy and on the Problems of Racial Contacts in This Country. By Kimball Young, July, 1922	1.00
No.12.	Fossil Freshwater Mollusks from Oregon, Contained in the Condon Museum of the University of Oregon. By G. Dallas Hanna. August, 1922	1.00

UNIVERSITY PRESS PUBLICATION COMMITTEE

Eric W. Allen, Manager University Press, Chairman.

F. G. Young
H. D. Sheldon

Alfred Powers
A. E. Sweetser

E. L. Packard
M. H. Douglass

Contained in the Condon Museum
of the University of
Oregon



BY
G. DALLAS HANNA

PUBLISHED BY THE UNIVERSITY
UNIVERSITY PRESS
EUGENE

QE
801
H25

CONTENTS

	Page
Introduction	3
Description of Species	4
Genus <i>Planorbis</i> Müller	
Section <i>Paraplanorbis</i> Hanna	
<i>Planorbis</i> (<i>Paraplanorbis</i>) <i>condoni</i> , n. sp.	
<i>Planorbis</i> (<i>Torquis</i>) <i>scabiosus</i> , n. sp.	
Genus <i>Parapholux</i> Hanna, new name	
<i>Parapholux packardi</i> , n. sp.	
Genus <i>Carinifex</i> Binney	
<i>Carinifex</i> , sp.	
Genus <i>Vorticifex</i> Meek	
<i>Vorticifex binneyi</i> (Meek)	
<i>Vorticifex condoni</i> , n. sp.	
<i>Vorticifex</i> , sp.	
Genus <i>Lanx</i> Clessin	
<i>Lanx moribundus</i> , n. sp.	
<i>Lanx nuttallii</i> (Haldeman)?	
Genus <i>Paludestrina</i> d'Orbigny	
<i>Paludestrina micrococcus</i> (Pilsbry)	
Genus <i>Valvata</i> Müller	
<i>Valvata oregonensis</i> , n. sp.	
Genus <i>Viviparus</i> Montfort	
<i>Viviparus</i> , sp.	
Genus <i>Pisidium</i> Pfeiffer	
<i>Pisidium</i> , sp.	
List of Localities	13
Explanation of Plates	15

FOSSIL FRESHWATER MOLLUSKS FROM OREGON

INTRODUCTION

The University of Oregon possesses a collection of fresh-water fossil mollusca which was assembled by the pioneer geologist of the state, Prof. Thomas Condon. While his interest was chiefly centered in the vertebrates, he collected a considerable amount of material in other groups as well. The writer has already reported upon the collection of fossil land shells made by him,¹ and it is through the courtesy of Dr. Earl L. Packard of the Department of Geology of the University that the results of a study of the freshwater forms is here presented.

The collection contains 21 lots of material, chiefly from supposed Pliocene deposits in the vicinity of Warner Lake in the eastern part of the state. One lot, however, appears to be of Eocene age and three have been recorded from the Pleistocene. It must be explained, however, that the last age determination was made with grave doubt as to its correctness because we know nothing of the stratigraphy of the deposits involved. The basis was solely the presence of the genus *Carinifex* in the material. It may have been accidentally excluded from the other lots since each one consists merely of a block of the material as it existed in place. No attempt was made in the collecting to secure a full representation of the species at any locality and as a consequence some of the most remarkable forms are represented only by fragments. Undoubtedly many more, not here recorded, exist at the various places and the field is one which offers great possibilities to the trained collector of fossil shells.

One notable feature connected with every locality is the absence therefrom of any species of the genera *Lymnaea* and *Physa*. Whether this is merely due to the manner in which the collections were made or whether these widespread groups actually did not exist in those ancient Oregon lakes can of course not be stated until further field work is done. The absence of all Unionidæ is also noteworthy.

¹ Hanna, G. D. Univ. Ore. Pub., Vol. 1, No. 6, pp. 1-8, pl. 1, 1920.

Fossil Freshwater Mollusks from Oregon

DESCRIPTION OF SPECIES

GENUS: PLANORBIS MÜLLER

SECTION PARAPLANORBIS HANNA, NEW SECTION

Whorls rounded on the periphery as in *Helisoma* Swainson but aperture not expanded, umbilicus very narrow and size minute.

Type, *Planorbis* (*Paraplanorbis*) *condoni* Hanna, new species.

PLANORBIS CONDONI, N. SP.

Plate 1, figures 1, 2, and 3

Shell, planorboid, composed of about $4\frac{1}{2}$ regularly increasing whorls; apical cavity a cone of about 120 degrees. Last whorl slightly angulated about the upper margin and descending slightly at the aperture. Lines of growth fine and even, giving the shell a silky luster. Umbilicus deeply rimate, .51 mm. in diameter. Aperture roughly triangular but rounded on the outer lip; not expanded or thickened but a depression both above and below the periphery. Diameter, 2.67 mm.; altitude, .35 mm.

Type, No. 14 University of Oregon. Cast of same No. 671, Mus. California Acad. Sci.

Type from University of Oregon, Locality 212. Vicinity of Warner Lake, eastern Oregon. Pliocene.

This little shell is unlike any other known to me; it could not even be placed in any of the sections of the genus *Planorbis* as defined by Dall, a late summarizer.² In the narrow, deeply reamed umbilicus it resembles the section *Hippeutis* Agassiz, but the whorls are not planulate on top or carinated on the periphery. No lamellæ were found in the aperture, thus excluding it from the genus *Segmentina* which it somewhat resembles.

The species is not common, only three specimens having been found in the deposits about Warner Lake. These display almost no variation from the type described above, except in being somewhat smaller and younger.

PLANORBIS (TORQUIS) SCABIOSUS, N. SP.

Plate 1, figures 4, 5 and 6

Shell similar in size and shape to *Planorbis parvus* Say, but has more whorls for the same size. Whorls increase in size less rapidly and they are more nearly circular in cross section. The apex is slightly depressed below the plane of the whorls. Last whorl not depressed at the aperture and aperture not expanded. Umbilicus regularly formed, a little narrower in shells of the same size than in *P. parvus*. The most conspicuous difference is in the lower margin of the aperture. In *P. scabiosus* this leaves the junction of the

² Dall, W. H. Harriman Alaska Exp., Vol. 13, p. 80, etc. 1905.

Fossil Freshwater Mollusks from Oregon

body whorl in a direction almost at right angles to the diameter of the shell while in *P. parvus* the line is only about 30 degrees from the horizontal. This makes the depth of the aperture in proportion to its breadth much greater in *P. scabiosus*. Diameter, 3.4 mm.; altitude, 1.1 mm.

Type, No. 15 University of Oregon. Cast of same, No. 678, Mus. California Acad. Sci.

Type from University of Oregon locality 212. Warner Lake beds, eastern Oregon. Pliocene.

In the shape of the whorls this little species differs from all other species of the small planorbs known to me. The sculpture consists only of fine regular growth lines but this is somewhat obscured by limy incrustations which suggested the name. The species is not rare at the type locality, about a dozen specimens having been found.

GENUS: PARAPHOLYX HANNA, NEW NAME

Pompholyx Lea, Proc. Acad. Nat. Sci. Phila., Vol. 8, p. 80, 1856. Type, *Pompholyx effusa* new species. Lea, Journ. Acad. Nat. Sci., Vol. 6, p. 156, pl. 23, fig. 69, 1866.—Dall, Proc. Calif. Acad. Sci., Vol. 3, p. 265, 1866. (Describes new subfamily, *Pompholinae*, possibly new family, *Pompholidae*. Figures and description of external anatomy of soft parts.)—Binney, Land & Fr. Water Sh. 2, Smith, Misc. Coll. 143, pp. 73-4, fig. 119, 1865. (Two views of type specimen.)—Dall, Ann. N. Y. Lyc. Nat. Hist., Vol. pp. 333-340, 1870. (Uses name *Pompholiginae* for subfamily including *Pompholyx*, *Carinifex* and *Choanomphalus* (?). Not *Pompholiginae* Dall, Proc. U. S. Nat. Mus., Vol. 23, p. 814, 1901, a section of the marine genus, *Divaricella*.)—Hannibal, Proc. Mal. Soc. Lond., Vol. 10, p. 162, 1912.—Walker, Univ. Mich. Misc. Pub. 6, p. 14, 105, 1018. Not *Pompholyx*, Gosse, Ann. Nat. Hist., Vol. 8, p. 203, 1851, a genus of *Rotifera*.

When Lea established the genus *Pompholyx* for the West American fresh-water shell he evidently was unaware that the same name had been previously used for a genus of rotifers. A search of available literature fails to disclose any other name that has been substituted for the mollusk; therefore the new name *Parapholyx* is proposed with the same type species, *Pompholyx effusa* Lea. *Pompholopsis* Call (Type, *P. whitei* Call)* was proposed as a subgenus of *Pompholyx* to contain a species found in the Tassajara Lake Beds, California. While it doubtless belongs to the same family as *Parapholyx* it is not believed to be congeneric and is therefore not available to replace the preoccupied name. Call states that the specimens of *Pompholopsis whitei* were deposited in the collection of the University of California at Berkeley but a search conducted therefor by Professor Bruce Clark has been without success.

* Call, R. E. Am. Geol., Vol. 1, p. 146, vgs. 1-3. 1888.

Fossil Freshwater Mollusks from Oregon

PARAPHOLYX PACKARDI, N. SP.

Plate 2, figures 1, 2, 3, 4, and 5

Shell, large and robust, composed of about $3\frac{1}{2}$ whorls which increase rapidly; suture deeply impressed around the last whorl, the depression almost amounting to a channel. Spire elevated but apex flattened and smooth. The shell is otherwise coarsely sculptured, the second whorl being marked with even ribs but these are gradually obliterated toward the aperture. Aperture, auricular, pointed below and thickened within; columella parallel with the axis and bearing an obtuse tooth at its center. Umbilicus closed by a deposit of callous material; when this is broken away the perforation is found to vary from almost nothing to about two millimeters.

MEASUREMENTS

Diameter	Altitude
15.4	13.2 (Type)
13.7	11.4
14.0	11.3
17.6	13.9
19.5	17.1
17.8	15.5
5.5	6.0 (Fresh shell from Locality 213)

Type, No. 16 University of Oregon. Cast of same, No. 672, Mus. California Acad. Sci.

Type from University of Oregon locality 212. Warner Lake Beds, eastern Oregon, Pliocene.

This and *Valvata oregonensis* are the most abundant species collected at locality 212. Large numbers of the shells are loosely cemented into a mass which has very little admixture of foreign material. Great variation is exhibited in the series studied, the above description, with the exception of the last phrase, being applicable to the type specimen only. It however represents the most common variation. Some specimens are a little more bulbous in the last whorl; in some the ribbing continues to the aperture and in some the ribbing is replaced by malleations. These variations in sculpture have sometimes been attributed to saline waters.

GENUS: CARINIFEX BINNEY

CARINIFEX, SP.

At locality 210 and possibly 212 there are fragmentary remains of a species of the genus *Carinifex* which cannot be identified with any known form. The species is characterized by its very narrow umbilicus but it is not here given a name because none of the specimens seems sufficiently well preserved to warrant this action. Some specimens grew to huge size, almost two inches in diameter. The species seems to be closer related to *C. ponsonbii* Smith, which I believe to be restricted solely to Klamath Lake at present, than any other but differs chiefly in having a much narrower umbilicus.

Fossil Freshwater Mollusks from Oregon

GENUS: VORTICIFEX MEEK

Vorticifex Meek, Proc. Acad. Nat. Sci. Phila. 1870, p. 59. Type, *Carinifex (Vorticifex) tryoni* Meek, new species. Proposed as subgenus of *Carinifex* Binney.

Vorticifex Meek, Ann. Lyc. Nat. Hist. N. Y. Vol. 9, p. 353, 1870. Correction of *Vorticifex*, originally misspelled. (Vide Scudder, Nomen. Zool. Bull. 19, U. S. Nat. Museum, p. 352, and pt. 2, p. 335, 1882.)

Vorticifex Meek, Tryon, Am. Journ. Conch. Vol. 6, pt. 3, p. 285, April, 1871. Review of Meek's paper. *Vorticifex* corrected to *Vorticifex* and *Carinifex tryoni* stated to be the type.

Vorticifex Meek, U. S. Geol. Surv. 40th parallel, Vol. 4, p. 187, 1877. Subgenus described and *binneyi* and *tryoni* both placed therein.

Vorticifex Meek, Call, Am. Geol. Vol. 1, p. 148, 1880. Genus formally described and *Carinifex binneyi* Meek designated as type, but wrongly.

Vorticifex, Dall, Harriman Alaska Exp. Vol. 13, p. 63, 1905. (A modification of *Carinifex* due to lake waters becoming alkaline.)

This genus was proposed by Meek for some shells which were collected in Nevada by the U. S. Geological Survey under Clarence King. Authorities have differed somewhat in the designation of the type species but I think there can be no question that *V. tryoni* is the proper one. Meek named two species and two subspecies but later consideration led him to suspect that all were the same. His original material seems not to have been subsequently studied nor does it appear that any collector has revisited the type locality. The chief distinguishing features of the genus are (1), lack of carinae, either at periphery, suture or around umbilicus; (2) much rounder body whorl than *Carinifex*; and (3) much less triangular aperture than *Carinifex*. The following are the names which have been assigned to the genus: *tryoni* Meek, *tryoni ventricosa* Meek, *tryoni concava* Meek, *binneyi* Meek, and *condoni*, new species. In addition to these there are certainly two others represented in the eastern Oregon deposits now under consideration but the specimens are too fragmentary for description or naming.

VORTICIFEX BINNEYI (MEEK)

Plate 4, figures 6, 7, and 8

Carinifex binneyi Meek, Proc. Acad. Nat. Sci. Phila. 1870, p. 59. "Fossil Hill, Hotspring Mountains, Idaho Terr. Apparently of Miocene or later age."

Carinifex (Vorticifex) binneyi Meek, U. S. Geol. Surv. 40th parallel, Vol. 4, p. 187, pl. 17, figs. 11, 11a, 1877. Locality corrected to "Fossil Hill, Kawsoh Mountains, Nevada."

Vorticifex binneyi Meek, Call, Am. Geol. Vol. 1, p. 148, fig. 6, 1880. Formal description of genus *Vorticifex* given and the species *binneyi* cited as type but this action was untenable as explained elsewhere.

Carinifex (Vorticifex) binneyi Meek, White, 3rd Ann. Rep. U. S. Geol. Surv., p. 448, pl. 32, figs. 5, 6, 1883. General account of the species and its locality.

Pompholyx (Carinifex) binneyi Meek, Hannibal, Proc. Mal. Soc. London, Vol. 10, p. 163, 1912. Recorded from "Eocene: Truckee Lake beds, Nevada; Payette Lake beds, Idaho."

Shell large and robust, composed of 3 to 4 whorls, apex slightly raised above plane of body whorl. Suture usually channeled;

Fossil Freshwater Mollusks from Oregon

aperture not greatly expanded, roughly triangular in shape but rounded at the outer and basal angles. Umbilicus about one-fourth the diameter of the shell. Surface marked with lines of growth, low even ridges or malleations. Diameter, 17 mm.; altitude, 9.4 mm.; width of umbilicus, 4.5 mm.

The above description is based upon a good series of specimens from University of Oregon locality 210, from the vicinity of Warner Lake, eastern Oregon. While the majority of the shells have a higher spire and a narrower umbilicus than Meek's description and figure show, these variable characters seem an insufficient basis for the creation of a new species at this time. Material from the original locality of *binneyi* is very badly needed for comparison because Meek himself came to doubt the distinctness of the widely and narrowly umbilicated forms he described from the same deposit. Should they prove to be the same, *binneyi* will take precedence, having page priority.

This species cannot stand as the type of *Vorticifex* as Call has placed it because Meek used the subgeneric name only with *tryoni*. It probably was his intention to have it apply to both species because he later so used it; nevertheless he did not do so in his original description and no construction can be placed upon his original phrases to show that he intended *binneyi* to be in *Vorticifex*. In his review of Meek's paper Tryon considered *tryoni* as the type of the new subgenus, if priority in designation be desired.

Hannibal has united both species and records them from the Eocene, a very doubtful occurrence. I have not seen authentic specimens of either but Meek's descriptions and figures certainly do not indicate that they are the same. He had a good series of specimens but did not find intergradation.

Cotypes are No. 12,542 U. S. Nat. Museum from Kawsoh Mountains, Fossil Hill, Nevada.*

VORTICIFEX CONDONI, N. SP.

Plate 4, figures 9 and 10

Shells composed of $3\frac{1}{4}$ whorls, the nuclear $1\frac{1}{2}$ smooth and polished. Next whorl after nucleus with 10 high ribs which continue with slightly lessening space between to the aperture. Suture well impressed but not channeled. Apex raised but very little above the plane of the body whorl. Periphery, rounded. Umbilicus wide, exposing whorls to the apex, a little more than one-third as wide as the greatest diameter of the shell. The base of the shell is obtusely angulated at the mouth of the umbilicus. Diameter, 4.4 mm.; altitude, 2.1 mm.

Type, No. 17 University of Oregon. Cast of same, No. 675, Mus. California Acad. Sci.

Type from University of Oregon locality 212, Warner Lake Beds, eastern Oregon. Pliocene.

* Bull. 53, U. S. National Museum.

Fossil Freshwater Mollusks from Oregon

Only one specimen of this interesting species was found at the type locality but it is abundant at locality 207 and shows but little variation. On account of its wide, reamed umbilicus and lack of spiral sculpture or carinæ it clearly belongs to the genus *Vorticifex*. The heavy ribs distinguish it from other species of the genus, even if it were not for its small size. There are costate specimens of *Parapholux packardi* in abundance in the same deposit, but in them the altitude of the shell is much greater in proportion to the diameter, the umbilicus is very small or absent, and specimens of the same size only have half as many whorls. It differs from *V. tryoni* by its smaller size and much coarser sculpture.

VORTICIFEX, SP.

Several lots of material from Lake County, southeastern Oregon, contain imperfect remains of a huge costate species of *Vorticifex*. It is decidedly different from any known species but no specimen is sufficiently well preserved to serve as a type although the characters can be fairly well determined from all. The spire is almost flush with the top of the rounded body whorl which is marked with heavy ribs, entirely to the aperture. The distance between these ribs is more than two millimeters and they are as perfectly formed as the sculpturing on any marine mollusk, a unique character among North American fresh-water species. The umbilicus is narrow, deep and angulated around the margin. The characters of the aperture could not be determined with certainty. This is one of the most interesting discoveries in fresh-water molluscan paleontology in the west and it is to be regretted that the species is not represented by well preserved specimens.

GENUS: LANX CLESSIN

LANX MORIBUNDUS, N. SP.

Plate 1, figures 8 and 9

Shell ovate, the apex about one-third the distance from the anterior end. Spire elevated and acutely pointed, both inside and outside. Sculpture consists of rough irregular growth ridges, no radial markings; the irregularities of the outside are visible on the inside as concentric ridges of uneven strength. Length, 17.5 mm.; width, 14.5 mm.; height, 8.7 mm.

Type No. 18 University of Oregon. Cast of same, No. 673, Mus. California Acad. Sci.

Type from University of Oregon locality 210, Warner Lake beds, eastern Oregon. Pleistocene.

This singular species is the largest of North American fresh-water limpets. The collection at the type locality, where it is fairly common, contains one imperfect specimen which is more than 22 millimeters long; the type is of only average size. The

Fossil Freshwater Mollusks. from Oregon

closest relative of the species is *Lanx undulatus* (Meek)* described from the Kaw-Sow Mountains, Nevada. That species, however, has distinct undulations on the posterior slope and the anterior slope is more decidedly concave. In the series of specimens of *moribundus* the shape is found to be decidedly variable in outline but the height of the shell is more constant. It was also found at localities 209 and 219, both in the vicinity of Warner Lake.

LANX NUTTALLII (HALDEMAN) †

Plate 1, figure 7

Ancylus (Velletea) nuttallii Haldeman, Monog. Freshwater Univalve Shells, pt. 3, p. 3, inside of back cover, 1842. Oregon—DeKay, New York Moll., p. 13, 1843.

Acroloxus nuttallii Hald. Binney, Smith. Misc. Coll. No. 143, p. 147, 1865. Original description repeated.—Cooper, Proc. Calif. Acad. Sci. Vol. 4, p. 100, 1870. Brief description, no localities.—Cooper, Proc. Calif. Acad. Sci. Vol. 4, p. 174, 1972. Snake River, Washington, one-half inch long, sinistral apex. Alameda County, [California?]

Ancylus nuttallii Hald. Carpenter, Smith. Misc. Coll. 252, p. 85, 1872. A note by J. G. Cooper states that this is questionably equal to *A. caurinus* (Wm. Cooper (nomen nudum) of the Pac. Rail. R. Rep. Vol. 12, pt. 2, p. 378, 1860. J. G. Cooper later (Proc. Calif. Acad. Sci. 2nd ser. Vol. 3, pp. 70-91, 1890) considered *caurinus* distinct and Dall (Harriman Alaska Exp. Vol. 13, 1905) doubtfully referred it to *A. fragilis*, so the above note in Carpenter's report may safely be ignored.

Acroloxus nuttallii Hald. Carpenter, Smith. Misc. Coll. No. 252, p. 161, 1872. Oregon. Copy of Binney's record, Syn. Air Breath. Moll. of N. A., Smith. Inst. No. 111, Dec. 9, 1863.

Lanx nuttalli (Haldeman), Hannibal, Proc. Mal. Soc. London, Vol. 10, p. 149, 1912. Brief description. Listed from Columbia River and tributaries. Following are listed as synonyms: *crassus* Haldeman; *kooteniensis* Baird; *subrotundatus* Tryon.

Lanx nuttallii (Haldeman), Walker, Univ. Mich. Misc. Pub. No. 6, p. 117, 1918. Citations of Binney and Haldeman as above.

The identification of the fossil shell from Warner Lake beds, University of Oregon locality 212, with this species has necessarily been made with some doubt. *A. nuttallii* has never been figured, apparently, and no description of more than three lines has been seen. Of course for identification purposes we have little more than a nude name. If the fossil were perfect, Haldeman's name would be ignored as unrecognizable but, as the figure on Plate 1 shows, our shell is decidedly too imperfect to serve as a type specimen. The apex and part of the margin are missing.

GENUS: PALUDESTRINA D'ORBIGNY

PALUDESTRINA MICROCOCCUS (PILSBRY)

Plate 4, figure 5

Amnicola micrococcus Pilsbry, in Stearns, North Am. Fauna No. 7, p. 277, fig. 1, 1893. Oasis Valley, Nevada. Death Valley, California.—Pilsbry,

* Meek, F. B. Proc. Acad. Nat. Sci. Phila., 1870, p. 57. Geol. Exp. 40th Parallel, Vol. 4, p. 186, pl. 17, figs. 12 a-b, 1877.

Fossil Freshwater Mollusks from Oregon

Nautilus, Vol. 12, p. 121, 1899, Nye Co., Nevada, Esmeralda Co., Nevada, Inyo and Kern Counties, California.—Pilsbry, Nautilus, Vol. 29, p. 111, 1916. Compared to *neomexicana*.

Nine specimens from University of Oregon locality 212 differ from this desert form only in being slightly larger in size. This does not seem a sufficient difference to warrant specific separation. The shape and number of whorls in the two are the same. The nine specimens do not show an appreciable range in size, all are about the same. One which is figured measures: altitude, 2.2 mm.; diameter, 1.7 mm.

The generic position of the western representatives of this group has not been satisfactorily determined. Since most of them have been placed in the genus *Paludestrina*, it seems best to retain them all there until the question can be thoroughly solved. *Amnicola* has usually been applied to the short spired forms and *Paludestrina* to the longer ones, a distinction which appears of rather minor value in this case.

GENUS: VALVATA MÜLLER

VALVATA OREGONENSIS, N. SP.

Plate 3, figures 1-18; plate 4, figures 1-4

Valvata whitei Hannibal, Nautilus, Vol. 23, pp. 104, 107, 1900. (First mentioned species.)

Valvata calli Hannibal, Nautilus, Vol. 23, pp. 104, 107, 1910.

Valvata tricarinata (Say), Hannibal, Proc. Mal. Soc. Lond. Vol. 10, p. 197, 1912 (in part).

Shell composed of four whorls, marked with none to three spiral carinae. Spire normally low and umbilicus wide, exposing all the whorls to the apex. There is great variation in the height of the spire and with its increase there is a proportionate decrease in the width of the umbilicus. The apical two whorls are flat and planulate, smooth and shining, unmarked with carinae even when the remainder of the shell may have three. Sculpture is comparatively uniform in character, being composed of fine growth lines.

MEASUREMENTS

Diameter, mm.	Altitude, mm.
8.0	5.0 (Type ecarinate)
7.8	5.3
6.9	3.7
5.3	3.8
6.5	3.7
6.1	3.2
6.3	4.4
4.6	4.0
6.2	5.4-5.2
5.2	5.0
4.6	2.6

Fossil Freshwater Mollusks from Oregon

Type No. 19, 10 paratypes, Condon Museum, University of Oregon. Casts of same, No. 674 Mus. California Acad. Sci.

Type from University of Oregon locality 212, Warner Lake beds, eastern Oregon. Pliocene.

This is the largest North American *Valvata*, one huge broken specimen being almost 10 mm. in diameter. It is characterized by its flat nuclear whorls and generally flat shell. Only rarely is the spire as elevated as the maximum shown in the figures, while great numbers are as flat as the lowest. The thickness of the shells is greater than of any other species seen. *Valvata virens* from Clear Lake, California, has a uniformly higher spire and is never carinated; also the suture is deeper and the peristome is attached to the body whorl in part. In *V. oregonensis* the peristome is entire. *V. utahensis* Call⁶ has a uniformly higher spire, deeper suture and narrower umbilicus. Moreover, although it is a carinate species, the nuclear whorls are not discoidal. *V. sincera* likewise has deeper sutures and an acute apex. The new species of course resembles the various forms of *V. tricarinata* more than any other but this last does not have all of the variations in the same colony, at least not in the colonies familiar to me. The carinæ of *tricarinata* are high and acute while in *V. oregonensis* they are rounded when present. Also in *tricarinata* the sutures are deeper, the sculpture as a rule coarser, and the nuclear whorls are elevated even in the low spired forms of the species.

This species was briefly described under two names in 1910 by Hannibal. Or at any rate there are two specimens in Stanford University which are marked "types" of *V. whitei* and *V. calli*, and they answer to the descriptions which accompany those names. Dr. J. P. Smith kindly permitted casts of them to be made for the California Academy of Sciences where they bear the numbers 643 and 644. These species were described from specimens collected near Sumner Lake, Oregon, by F. M. Anderson. Hannibal never published illustrations of his species and later threw both of them into the synonymy of *V. tricarinata*.

It may be challenged that all of the variations shown on plates 3 and 4 cannot belong to the same species but they all came from a single block of material, the longest dimension of which was not over three inches. Under such a circumstance and with every possible stage of intergradation, a multiplicity of names would seem superfluous.

V. oregonensis was a very common species in eastern Oregon in Pleistocene time. The University of Oregon collection contains specimens from numerous localities about Warner Lake, Snake River Valley and in Lake County.

⁶ Call, R. E. Bull. 11, U. S. Geol. Surv., p. 44, pl. 6, figs. 1-3. 1884.

Fossil Freshwater Mollusks from Oregon

GENUS: VIVIPARUS MONTFORT

VIVIPARUS, SP.

One lot of material from University of Oregon locality 211, said to have come from between Crooked River and Harney Lake, Oregon, consists entirely of compressed shells, thoroughly cemented and crystallized. All are so badly distorted that specific identification is impossible but conspicuous in the mass is a robust *Viviparus* similar to some of the species, *lei* for instance, from the Laramie and Eocene strata of the Rocky Mountains. It is possibly the same as *V. washingtonianus* Hannibal,⁷ but does not appear to be subcarinate on the periphery. The last was described from the "Tejon" Eocene strata of Little Falls, Washington. The Oregon shells appear more like *V. turneri* Hannibal⁸ described from Eocene strata, Truckee Lake beds, Nevada. Since no member of the family Viviparidæ is known to have persisted west of the Rocky Mountains after the Eocene, it seems safe to refer the material from locality 211 to that age.

GENUS: PISIDIUM PFEIFFER

PISIDIUM, SP.

The collection of shells from University of Oregon locality 212, Warner Lake beds of eastern Oregon, contains numerous specimens of *Pisidium*. There appear to be two species represented, a smooth one and a rugose one, but the nomenclature in this genus is so tremendously confused that identification is exceedingly difficult, well nigh impossible with certainty.

LIST OF LOCALITIES

University of Oregon locality numbers 200, 201, 202, 203, 204, Snake River Valley, Oregon. Pliocene. Contains *Valvata oregonensis*, *Parapholix packardi*, *Pisidium* sp., and a huge species of costate *Vorticifex*. Preservation is so poor that specific identification is not possible with certainty, the shells being usually represented by casts, or impressions. The *Vorticifex* is undescribed and represented by fragments at several localities.

205. Central Oregon. Pliocene. Contains *Valvata oregonensis*, *Parapholix packardi* and a species of *Pisidium* firmly cemented together. The shells are not easily extracted.

206. No locality. Contains poorly preserved *Valvata oregonensis*, *Parapholix packardi* and the costate *Vorticifex*.

207. Snake River Valley, Oregon. Pliocene. *Vorticifex condoni* abundant; *Pisidium*, two species abundant; *Parapholix packardi* and *Valvata ore-*

⁷ Hannibal, H. Proc. Mal. Soc., London, Vol. 10, p. 194, pl. 8, fig. 32, 1912.

⁸ Opt. Cit., p. 194, pl. 8, fig. 31.

Fossil Freshwater Mollusks from Oregon

gonensis not so common. Material is firmly cemented together but shells come out fairly well preserved.

208. Snake River Valley, Oregon. Pliocene. Contains *Valvata oregonensis*, *Parapholix packardii*, *Planorbis scabiosus* and numerous Ostracod shells firmly cemented together with sand and shell fragments and pieces of lava rock.

209. Warner Lake, Oregon. Pleistocene? Hard calcareous cement, the shells of which have been dissolved away. Contains casts or imprints of *Valvata oregonensis*, *Parapholix packardii*, *Pisidium* sp., *Vorticifex* new species, *Vorticifex*, cf. *binneyi* and *Lanz moribundus*.

210. Warner Lake, Oregon. Pleistocene? Well preserved fossils, toughly cemented together with calcareous deposit. Contains *Valvata oregonensis*, *Parapholix packardii*, *Vorticifex condoni*, *Vorticifex binneyi*, *Paludestrina micrococcus*, *Pisidium* sp., *Carinifex* sp., *Lanz moribundus*.

211. Between Crooked River and Harney Lake, Oregon. Eocene? Contains *Viviparus*. Material consists of shells and fragments thoroughly crushed, compressed and cemented.

212. Warner Lake, Oregon. Pliocene. Well preserved fossils in loose sandy cement. Contains *Valvata oregonensis*, *Parapholix packardii*, *Lanz* sp., *Pisidium* sp., *Planorbis scabiosus*, *Paludestrina micrococcus*, *Vorticifex condoni* and *Carinifex* (?) sp.

213. Warner Lake, Oregon. Pliocene. Well preserved shells loosely cemented together. Contains *Valvata oregonensis*, *Parapholix packardii* and a *Pisidium*.

214, 215, 216. Lake County, southeastern Oregon. Pliocene. Contains *Valvata oregonensis*, *Parapholix packardii* and the huge costate *Vorticifex*. Matrix is a firm cement and shells are represented by casts and imprints.

217. Lake County, southeastern Oregon. Contains *Lanz* sp. and two other species of Gastropods which cannot be determined. The material is a hard limestone, brown in color, the shells being preserved as casts only.

218. Lake County, Oregon. Pliocene. Well preserved shells loosely cemented together. Contains *Valvata oregonensis*, *Parapholix packardii* and a *Pisidium*.

219. Warner Lake, Oregon. Pleistocene? Hard calcareous cement, the shells of which have been dissolved away in large part. Contains casts and molds of *Valvata oregonensis*, *Parapholix packardii*, *Pisidium* sp., *Vorticifex* new species and *Vorticifex* cf. *binneyi*, *Lanz*.

EXPLANATION OF PLATES

PLATE 1

Figures 1, 2, and 3.—*Planorbis condoni*, n. sp. Type. Diameter, 2.67 mm.; altitude, .55 mm.

Figures 4, 5, and 6.—*Planorbis scabiosus*, n. sp. Type. Diameter, 3.4 mm.; altitude, 1.1 mm.

Figure 7.—*Lanx nuttallii* (Haldeman)? Length, 6.4 mm.; width, 5.7 mm.

Figure 8.—*Lanx moribundus*, n. sp. Type. Length, 17.5 mm.; width, 14.5 mm.; height, 8.7 mm.

Figure 9.—*Lanx moribundus*, n. sp. Paratype. Length, 15.1 mm.; width, 11.5 mm.; height, 8.9 mm.,

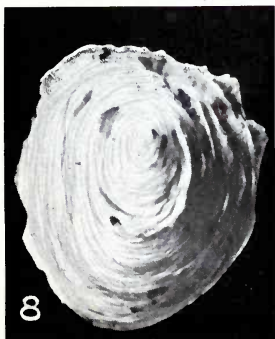
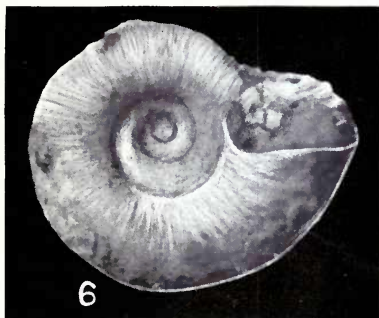
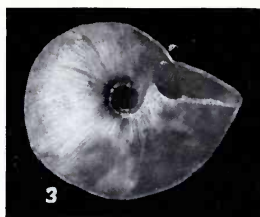


PLATE 2

Figure 1.—*Parapholix packardī*, n. sp. Type. Diameter, 15.4 mm.; altitude, 13.2 mm.

Figure 2.—*Parapholix packardī*, n. sp. Paratype. Diameter, 14.0 mm.; altitude, 11.3 mm.

Figure 3.—*Parapholix packardī*, n. sp. Paratype. Diameter, 19.5 mm.; altitude, 17.1 mm.

Figure 4.—*Parapholix packardī*, n. sp. Paratype. Diameter, 17.8 mm.; altitude, 15.5 mm.

Figure 5.—*Parapholix packardī*, n. sp. Paratype. Diameter, 13.7 mm.; altitude, 11.4 mm.

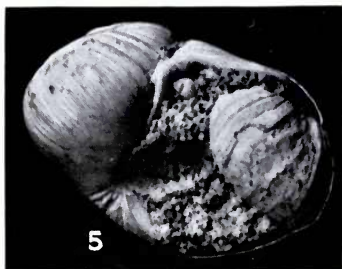
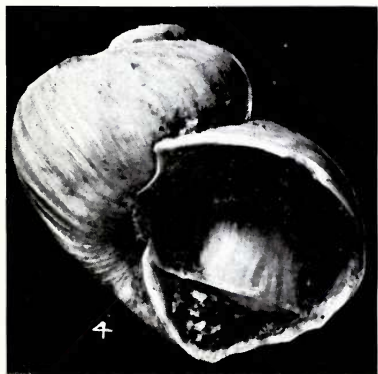
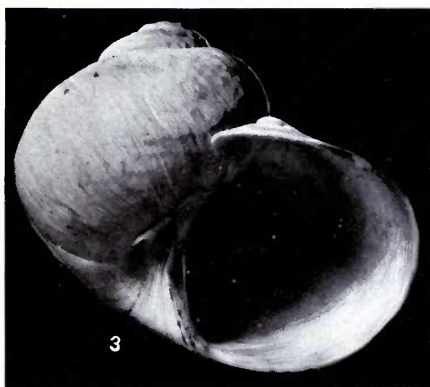
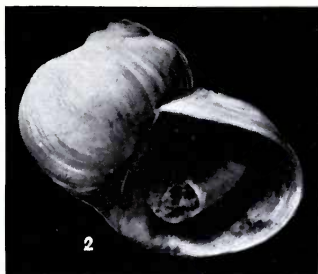
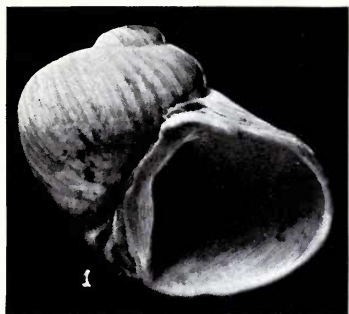


PLATE 3

Figures 1 and 2.—*Valvata oregonensis*, n. sp. Type. Diameter, 8.0 mm.; altitude, 5.0 mm.

Figures 3 and 4.—*Valvata oregonensis*, n. sp. Paratype. Enlarged 5.5 diameters. Showing elevation of spire and slight formation of marginal carina.

Figures 5 and 6.—*Valvata oregonensis*, n. sp. Paratype. Enlarged 5.5 diameters. Spire much elevated and marginal carina more pronounced.

Figures 7 and 8.—*Valvata oregonensis*, n. sp. Paratype. Enlarged 5.5 diameters. Spire depressed, dorsal carina present.

Figures 9 and 10.—*Valvata oregonensis*, n. sp. Paratype. Enlarged 5.5 diameters. Spire depressed, basal carina present.

Figures 11 and 12.—*Valvata oregonensis*, n. sp. Paratype. Enlarged 5.5 diameters. Spire greatly elevated, marginal carina present.

Figures 13 and 14.—*Valvata oregonensis*, n. sp. Paratype. Enlarged 5.5 diameters. Spire greatly depressed, basal carina present.

Figures 15 and 16.—*Valvata oregonensis*, n. sp. Paratype. Enlarged 5.5 diameters. Spire normal; dorsal and basal carinae present.

Figures 17 and 18.—*Valvata oregonensis*, n. sp. Paratype. Enlarged 5.5 diameters. Spire elevated, dorsal, marginal and basal carinae present.

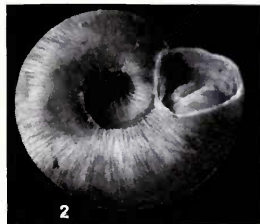


PLATE 4

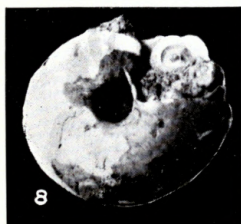
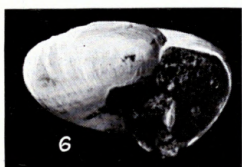
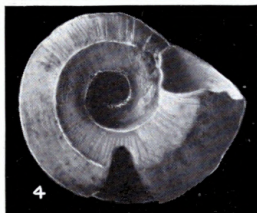
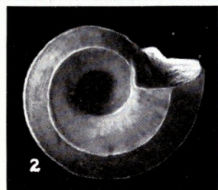
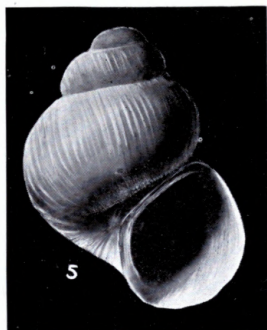
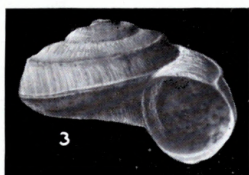
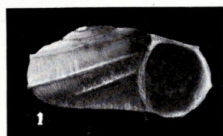
Figures 1 and 2.—*Valvata oregonensis*, n. sp. Paratype. Enlarged 5.5 diameters. Dorsal, marginal and basal carinae present.

Figures 3 and 4.—*Valvata oregonensis*, n. sp. Paratype. Enlarged 5.5 diameters. Dorsal, marginal and basal carinae present.

Figure 5.—*Palundestrina micrococcus* (Pilsbry). Diameter, 1.7 mm.; altitude, 2.2 mm.

Figures 6, 7, and 8.—*Vorticifer binneyi* (Meek). Fig. 6, measures: diameter, 14.1 mm.; altitude, 9.2 mm. Fig. 7, measures: diameter, 17.1 mm.; altitude, 9.8 mm. Fig. 8, measures: diameter, 12.8 mm.; altitude, 9 mm.

Figures 9 and 10.—*Vorticifer condoni*, n. sp. Type. Diameter, 4.4 mm.; altitude, 2.1 mm.



DATE DUE

University of California
SOUTHERN REGIONAL LIBRARY FACILITY
305 De Neve Drive - Parking Lot 17 • Box 951388
LOS ANGELES, CALIFORNIA 90095-1388

Return this material to the library from which it was borrowed.

OCT 11 2004

TEDINUSA

UC SOUTHERN REGIONAL LIBRARY FACILITY



A 000 826 488 9

California
Regional
Facility